

## **Supplemental Material**

### **Size Segregated Particle Number Concentrations and Respiratory Emergency Room Visits in Beijing, China**

Arne Marian Leitte<sup>1</sup>, Uwe Schlink<sup>1</sup>, Matthias Richter<sup>1</sup>, Olf Herbarth<sup>2</sup>, Birgit Wehner<sup>3</sup>, Thomas Tuch<sup>3</sup>, Alfred Wiedensohler<sup>3</sup>, Xiao-Chuan Pan<sup>4</sup>, Zhijun Wu<sup>3,5</sup>, Min Hu<sup>5</sup>, Minjuan Yang<sup>4</sup>, Liqun Liu<sup>4,6</sup>, Susanne Breitner<sup>6</sup>, Josef Cyrys<sup>6,7</sup>, Annette Peters<sup>6</sup>, H.-Erich Wichmann<sup>6,8</sup>, Ulrich Franck<sup>1</sup>

<sup>1</sup>Core Facility Studies, Helmholtz Centre for Environmental Research - UFZ, Leipzig, Germany; <sup>2</sup>University of Leipzig, Faculty of Medicine, Department Environmental Medicine and Hygiene, Germany; <sup>3</sup>Physics Department, Leibniz Institute for Tropospheric Research (IfT), Leipzig, Germany; <sup>4</sup>Peking University, School of Public Health, Department of Occupational and Environmental Health, Beijing, P. R. China; <sup>5</sup>State Key Joint Laboratory of Environmental Simulation and Pollution Control, College of Environmental Sciences and Engineering, Peking University, Beijing, P. R. China; <sup>6</sup>Institute of Epidemiology, Helmholtz Zentrum München - German Research Center for Environmental Health, Neuherberg, Germany; <sup>7</sup>Environment Science Center, University Augsburg, Augsburg, Germany; <sup>8</sup>IBE-Chair of Epidemiology, Ludwig-Maximilians-University, Munich, Germany.

Supplemental Material, Table 1: Correlation coefficients for daily mean values of meteorological and air pollution variables.

Supplemental Material, Table 2: Relative risks (RR) (together with 95% confidence intervals) for total respiratory ERV per IQR increment of air pollutant in single-pollutant models.

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Supplemental Material, Table 4: Sensitivity analyses for the associations between total ERV and PNC<sub>100-300</sub>.

Supplemental Material, Table 1: Correlation coefficients for daily mean values of meteorological variables, and air pollution variables.

Meteorological and air pollution variables	Air Temperature [°C]	Relative Humidity [%]	Air Pressure [hPa]	SO <sub>2</sub> [µg/m <sup>3</sup> ]	NO <sub>2</sub> [µg/m <sup>3</sup> ]	PM <sub>10</sub> [µg/m <sup>3</sup> ]	UFP [1/cm <sup>3</sup> ]	PNC <sub>total</sub> [1/cm <sup>3</sup> ]	PNC <sub>3-10</sub> [1/cm <sup>3</sup> ]	PNC <sub>10-30</sub> [1/cm <sup>3</sup> ]	PNC <sub>30-50</sub> [1/cm <sup>3</sup> ]	PNC <sub>50-100</sub> [1/cm <sup>3</sup> ]	PNC <sub>100-300</sub> [1/cm <sup>3</sup> ]	PNC <sub>300-1000</sub> [1/cm <sup>3</sup> ]	PSC <sub>total</sub> [µm <sup>2</sup> /cm <sup>3</sup> ]	PSC <sub>50-100</sub> [µm <sup>2</sup> /cm <sup>3</sup> ]	PSC <sub>100-300</sub> [µm <sup>2</sup> /cm <sup>3</sup> ]	PSC <sub>300-1000</sub> [µm <sup>2</sup> /cm <sup>3</sup> ]
Air Temperature [°C]	1.00																	
Relative Humidity [%]	0.44	1.00																
Air Pressure [hPa]	-0.84	-0.35	1.00															
SO <sub>2</sub> [µg/m <sup>3</sup> ]	-0.29	-0.07	0.15	1.00														
NO <sub>2</sub> [µg/m <sup>3</sup> ]	-0.30	0.10	0.19	0.24	1.00													
PM <sub>10</sub> [µg/m <sup>3</sup> ]	0.15	0.14	-0.21	-0.12	0.45	1.00												
UFP [1/cm <sup>3</sup> ]	-0.22	-0.39	0.18	-0.26	0.06	0.05	1.00											
PNC <sub>total</sub> [1/cm <sup>3</sup> ]	-0.25	-0.21	0.18	-0.18	0.27	0.23	0.92	1.00										
PNC <sub>3-10</sub> [1/cm <sup>3</sup> ]	-0.22	-0.51	0.19	-0.19	-0.16	-0.09	0.80	0.59	1.00									
PNC <sub>10-30</sub> [1/cm <sup>3</sup> ]	-0.02	-0.40	0.02	-0.32	-0.09	0.01	0.91	0.74	0.80	1.00								
PNC <sub>30-50</sub> [1/cm <sup>3</sup> ]	-0.17	-0.15	0.16	-0.23	0.22	0.12	0.80	0.86	0.31	0.62	1.00							
PNC <sub>50-100</sub> [1/cm <sup>3</sup> ]	-0.26	0.08	0.19	-0.03	0.43	0.23	0.46	0.71	-0.09	0.14	0.80	1.00						
PNC <sub>100-300</sub> [1/cm <sup>3</sup> ]	-0.13	0.36	0.05	0.15	0.55	0.44	0.00	0.39	-0.39	-0.27	0.33	0.76	1.00					
PNC <sub>300-1000</sub> [1/cm <sup>3</sup> ]	-0.02	0.47	-0.04	0.25	0.56	0.55	-0.21	0.14	-0.41	-0.38	0.03	0.40	0.81	1.00				
PSC <sub>total</sub> [µm <sup>2</sup> /cm <sup>3</sup> ]	-0.06	0.44	-0.02	0.23	0.58	0.55	-0.12	0.26	-0.41	-0.33	0.18	0.57	0.92	0.97	1.00			
PSC <sub>50-100</sub> [µm <sup>2</sup> /cm <sup>3</sup> ]	-0.26	0.12	0.18	-0.01	0.45	0.24	0.40	0.67	-0.13	0.09	0.75	1.00	0.80	0.44	0.62	1.00		
PSC <sub>100-300</sub> [µm <sup>2</sup> /cm <sup>3</sup> ]	-0.10	0.39	0.02	0.18	0.55	0.47	-0.06	0.33	-0.41	-0.31	0.25	0.68	0.99	0.87	0.96	0.72	1.00	
PSC <sub>300-1000</sub> [µm <sup>2</sup> /cm <sup>3</sup> ]	-0.01	0.48	-0.05	0.25	0.56	0.56	-0.22	0.13	-0.41	-0.38	0.02	0.38	0.78	1.00	0.96	0.42	0.85	1.00

PNC<sub>x</sub>: Particle number concentration in the given (x in nm) or total size range (3 nm - 1 µm); PSC<sub>x</sub>: Particle surface area concentration in the given (x in nm) or total size range; (3 nm - 1 µm); UFP: Ultrafine particles - Particle number concentrations in the size range 3 - 100 nm

Supplemental Material, Table 2: Relative risks (RR) (together with 95% confidence intervals) for total respiratory ERV per IQR increment of air pollutant in single-pollutant models.

Pollutant	Time delay	IQR <sup>a</sup>	Cumulative effect model	PDL model	Single lag model
			RR (95%-CI)	RR (95%-CI)	
SO <sub>2</sub>	same day	100	1.01 (0.97 ; 1.05)	1.00 (0.96 ; 1.04)	1.01 (0.97-1.05)
	1	100	1.02 (0.97 ; 1.07)	1.02 (0.99 ; 1.04)	1.01 (0.98-1.05)
	2	100	1.03 (0.98 ; 1.09)	1.01 (0.99 ; 1.04)	1.02 (0.99-1.06)
	3	100	1.04 (0.97 ; 1.11)	1.00 (0.98 ; 1.03)	1.01 (0.97-1.05)
	4	100	1.04 (0.96 ; 1.11)	1.00 (0.97 ; 1.02)	1.00 (0.96-1.03)
	5	100	1.04 (0.97 ; 1.12)	1.01 (0.98 ; 1.04)	1.01 (0.98-1.05)
NO <sub>2</sub>	same day	40	1.02 (0.98 ; 1.05)	1.01 (0.97 ; 1.05)	1.02 (0.98-1.05)
	1	40	1.02 (0.98 ; 1.06)	1.01 (0.99 ; 1.04)	1.01 (0.98-1.05)
	2	40	1.04 (0.99 ; 1.09)	1.01 (0.99 ; 1.03)	1.03 (1.00-1.07)
	3	40	1.05 (1.00 ; 1.10)	1.01 (0.99 ; 1.03)	1.03 (0.99-1.06)
	4	40	1.05 (1.00 ; 1.11)	1.01 (0.99 ; 1.03)	1.01 (0.98-1.04)
	5	40	1.06 (1.00 ; 1.12) <sup>*</sup>	1.01 (0.98 ; 1.04)	1.02 (0.98-1.05)
PM <sub>10</sub>	same day	90	1.01 (0.98 ; 1.05)	1.01 (0.97 ; 1.05)	1.01 (0.98-1.05)
	1	90	1.01 (0.97 ; 1.05)	1.01 (0.98 ; 1.03)	1.00 (0.97-1.04)
	2	90	1.00 (0.96 ; 1.05)	0.99 (0.97 ; 1.01)	1.00 (0.96-1.03)
	3	90	0.99 (0.94 ; 1.05)	0.99 (0.97 ; 1.01)	0.99 (0.95-1.02)
	4	90	0.99 (0.94 ; 1.05)	0.99 (0.97 ; 1.02)	1.00 (0.96-1.03)
	5	90	1.00 (0.94 ; 1.06)	1.02 (0.99 ; 1.06)	1.02 (0.99-1.05)
UFP	same day	11000	1.01 (0.95 ; 1.07)	1.00 (0.94 ; 1.07)	1.01 (0.95-1.07)
	1	11000	1.01 (0.95 ; 1.09)	1.02 (0.98 ; 1.07)	1.00 (0.95-1.06)
	2	11000	1.02 (0.94 ; 1.11)	1.03 (0.99 ; 1.06)	1.01 (0.96-1.07)
	3	11000	1.01 (0.93 ; 1.10)	1.01 (0.98 ; 1.05)	0.97 (0.92-1.02)
	4	11000	1.01 (0.92 ; 1.11)	0.98 (0.94 ; 1.02)	0.97 (0.92-1.02)
	5	11000	0.99 (0.89 ; 1.09)	0.93 (0.88 ; 0.99) <sup>*</sup>	0.93 (0.88-0.97) <sup>*</sup>

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Supplemental Material, Table 2 (cont.):

Pollutant	Time delay	IQR <sup>a</sup>	Cumulative effect model RR (95%-CI)	PDL model RR (95%-CI)	Single lag model
PNC <sub>total</sub>	same day	12600	1.03 (0.98 ; 1.09)	1.01 (0.95 ; 1.08)	1.03 (0.98-1.09)
	1	12600	1.04 (0.97 ; 1.12)	1.06 (1.01 ; 1.11)*	1.02 (0.96-1.08)
	2	12600	1.07 (0.99 ; 1.16)	1.04 (1.00 ; 1.08)	1.03 (0.98-1.10)
	3	12600	1.05 (0.96 ; 1.15)	0.99 (0.95 ; 1.03)	0.96 (0.91-1.02)
	4	12600	1.04 (0.94 ; 1.14)	0.96 (0.92 ; 1.00)*	0.95 (0.90-1.00)
	5	12600	1.03 (0.93 ; 1.15)	0.97 (0.92 ; 1.03)	0.94 (0.89-0.99)*
PNC <sub>3-10</sub>	same day	3880	0.97 (0.93 ; 1.01)	0.98 (0.93 ; 1.03)	0.97 (0.93-1.01)
	1	3880	0.98 (0.93 ; 1.04)	0.98 (0.95 ; 1.01)	1.01 (0.97-1.05)
	2	3880	0.96 (0.90 ; 1.03)	1.00 (0.97 ; 1.02)	0.99 (0.96-1.03)
	3	3880	0.95 (0.88 ; 1.02)	1.01 (0.99 ; 1.03)	0.98 (0.95-1.02)
	4	3880	0.98 (0.90 ; 1.06)	1.00 (0.98 ; 1.03)	1.01 (0.98-1.04)
	5	3880	0.94 (0.86 ; 1.02)	0.96 (0.92 ; 0.99)*	0.96 (0.93-0.99)*
PNC <sub>10-30</sub>	same day	4300	0.98 (0.93 ; 1.04)	0.99 (0.93 ; 1.06)	0.98 (0.93-1.04)
	1	4300	0.99 (0.92 ; 1.07)	1.00 (0.96 ; 1.04)	1.00 (0.95-1.05)
	2	4300	0.99 (0.91 ; 1.07)	1.01 (0.98 ; 1.05)	1.00 (0.95-1.05)
	3	4300	0.98 (0.90 ; 1.07)	1.02 (0.98 ; 1.05)	0.98 (0.93-1.03)
	4	4300	1.00 (0.91 ; 1.11)	1.00 (0.96 ; 1.04)	0.99 (0.94-1.04)
	5	4300	0.98 (0.88 ; 1.10)	0.95 (0.90 ; 1.00)*	0.95 (0.90-0.99)*
PNC <sub>30-50</sub>	same day	2300	1.03 (0.99 ; 1.08)	1.02 (0.98 ; 1.07)	1.03 (0.99-1.08)
	1	2300	1.03 (0.97 ; 1.09)	1.04 (1.00 ; 1.07)*	1.00 (0.95-1.04)
	2	2300	1.05 (0.98 ; 1.12)	1.02 (0.99 ; 1.05)	1.01 (0.96-1.05)
	3	2300	1.04 (0.96 ; 1.12)	0.99 (0.96 ; 1.02)	0.98 (0.93-1.02)
	4	2300	1.03 (0.94 ; 1.12)	0.97 (0.94 ; 1.00)	0.95 (0.91-0.99)*
	5	2300	1.01 (0.92 ; 1.11)	0.96 (0.92 ; 1.01)	0.96 (0.91-1.00)

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Supplemental Material, Table 2 (cont.):

Pollutant	Time delay	IQR <sup>a</sup>	Cumulative effect model RR (95%-CI)	PDL model RR (95%-CI)	Single lag model
PNC <sub>50-100</sub>	same day	3600	1.03 (0.99 ; 1.07)	1.01 (0.97 ; 1.06)	1.03 (0.99-1.07)
	1	3600	1.03 (0.98 ; 1.09)	1.05 (1.01 ; 1.08)*	1.00 (0.96-1.04)
	2	3600	1.07 (1.00 ; 1.15)*	1.03 (1.00 ; 1.06)*	1.03 (0.98-1.07)
	3	3600	1.08 (1.00 ; 1.17)*	0.99 (0.97 ; 1.02)	1.00 (0.96-1.04)
	4	3600	1.05 (0.96 ; 1.14)	0.98 (0.95 ; 1.01)	0.96 (0.92-1.00)*
	5	3600	1.06 (0.97 ; 1.17)	1.01 (0.97 ; 1.05)	0.99 (0.95-1.03)
PNC <sub>100-300</sub>	same day	4400	1.04 (1.00 ; 1.08)	1.04 (0.99 ; 1.08)	1.04 (1.00-1.08)
	1	4400	1.05 (0.99 ; 1.11)	1.05 (1.02 ; 1.08)*	1.01 (0.97-1.06)
	2	4400	1.09 (1.02 ; 1.16)*	1.02 (0.99 ; 1.04)	1.03 (0.99-1.07)
	3	4400	1.08 (1.00 ; 1.17)*	0.99 (0.97 ; 1.01)	0.99 (0.96-1.03)
	4	4400	1.05 (0.96 ; 1.14)	0.98 (0.96 ; 1.01)	0.98 (0.94-1.01)
	5	4400	1.08 (0.99 ; 1.18)	1.04 (1.00 ; 1.08)*	1.02 (0.98-1.05)
PNC <sub>300-1000</sub>	same day	830	1.04 (1.00 ; 1.08)	1.04 (0.99 ; 1.08)	1.04 (1.00-1.08)
	1	830	1.03 (0.99 ; 1.08)	1.02 (0.99 ; 1.04)	1.01 (0.98-1.05)
	2	830	1.03 (0.98 ; 1.09)	0.99 (0.97 ; 1.01)	1.00 (0.97-1.04)
	3	830	1.02 (0.97 ; 1.08)	0.98 (0.96 ; 1.00)	0.99 (0.96-1.02)
	4	830	1.01 (0.95 ; 1.08)	0.99 (0.97 ; 1.02)	1.00 (0.97-1.03)
	5	830	1.03 (0.96 ; 1.10)	1.04 (1.00 ; 1.07)*	1.02 (0.99-1.05)
PSC <sub>total</sub>	same day	960	1.05 (1.00 ; 1.09)*	1.04 (1.00 ; 1.08)	1.05 (1.00-1.09)*
	1	960	1.04 (0.99 ; 1.10)	1.03 (1.00 ; 1.05)*	1.01 (0.98-1.05)
	2	960	1.05 (0.99 ; 1.11)	1.00 (0.98 ; 1.02)	1.01 (0.98-1.05)
	3	960	1.04 (0.98 ; 1.11)	0.98 (0.96 ; 1.00)	0.99 (0.96-1.03)
	4	960	1.02 (0.95 ; 1.09)	0.99 (0.97 ; 1.01)	0.99 (0.96-1.02)
	5	960	1.04 (0.97 ; 1.12)	1.04 (1.01 ; 1.08)*	1.02 (0.99-1.06)

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Supplemental Material, Table 2 (cont.):

Pollutant	Time delay	IQR <sup>a</sup>	Cumulative effect model	PDL model	Single lag model
			RR (95%-CI)	RR (95%-CI)	
PSC <sub>50-100</sub>	same day	60	1.03 (0.99 ; 1.07)	1.01 (0.97 ; 1.06)	1.03 (0.99-1.07)
	1	60	1.03 (0.98 ; 1.09)	1.05 (1.02 ; 1.08)*	1.00 (0.96-1.04)
	2	60	1.07 (1.01 ; 1.15)*	1.03 (1.00 ; 1.06)*	1.03 (0.99-1.07)
	3	60	1.09 (1.01 ; 1.17)*	1.00 (0.97 ; 1.02)	1.00 (0.96-1.04)
	4	60	1.05 (0.96 ; 1.14)	0.98 (0.95 ; 1.01)	0.96 (0.93-1.00)
	5	60	1.07 (0.97 ; 1.17)	1.01 (0.97 ; 1.05)	0.99 (0.95-1.03)
PSC <sub>100-300</sub>	same day	440	1.04 (1.00 ; 1.09)*	1.04 (1.00 ; 1.09)	1.04 (1.00-1.09)*
	1	440	1.05 (0.99 ; 1.11)	1.04 (1.01 ; 1.07)*	1.02 (0.98-1.06)
	2	440	1.08 (1.01 ; 1.15)*	1.01 (0.99 ; 1.04)	1.02 (0.99-1.06)
	3	440	1.07 (1.00 ; 1.15)	0.99 (0.96 ; 1.01)	0.99 (0.95-1.03)
	4	440	1.04 (0.96 ; 1.13)	0.99 (0.96 ; 1.01)	0.98 (0.95-1.02)
	5	440	1.07 (0.98 ; 1.17)	1.04 (1.00 ; 1.08)*	1.02 (0.98-1.06)
PSC <sub>300-1000</sub>	same day	490	1.04 (1.00 ; 1.08)	1.04 (0.99 ; 1.08)	1.04 (1.00-1.08)
	1	490	1.03 (0.99 ; 1.08)	1.01 (0.99 ; 1.04)	1.01 (0.98-1.05)
	2	490	1.03 (0.98 ; 1.08)	0.99 (0.97 ; 1.01)	1.00 (0.97-1.03)
	3	490	1.02 (0.97 ; 1.08)	0.98 (0.96 ; 1.00)	0.99 (0.96-1.02)
	4	490	1.01 (0.95 ; 1.07)	0.99 (0.97 ; 1.02)	1.00 (0.97-1.03)
	5	490	1.02 (0.96 ; 1.09)	1.04 (1.01 ; 1.07)*	1.02 (0.99-1.06)

PDL models with the lag coefficients to follow a third-degree polynomial of the lag number and a maximum lag of 5 days; Cumulative effect models representing time delayed effects with moving averages up to 6 days (mean of the same day and 5 previous days).

\* p < 0.05 (p-values for the null hypothesis that the corresponding parameter is zero); <sup>a</sup> Units for IQR: SO<sub>2</sub>, NO<sub>2</sub> and PM<sub>10</sub> in µg/m<sup>3</sup>, PNC<sub>x</sub> and UFP in 1/cm<sup>3</sup>; PSC<sub>x</sub> in µm<sup>2</sup>/cm<sup>3</sup>; PNC<sub>x</sub>: Particle number concentration in the given (x in nm) or total size range (3 nm - 1 µm); PSC<sub>x</sub>: Particle surface area concentration in the given (x in nm) or total size range (3 nm - 1 µm); UFP: Ultrafine particles - Particle number concentrations in the size range 3 - 100 nm.

Supplemental Material, Table 3: Relative risks (RR; together with 95% confidence intervals) between total respiratory ERV and an IQR increment of air pollutant while controlling for NO<sub>2</sub> or PM<sub>10</sub>.

Pollutant	Time delay in days	While controlling for NO <sub>2</sub>	While controlling PM <sub>10</sub>
SO <sub>2</sub>	Same day	1.00 (0.96 ; 1.04)	1.00 (0.96 ; 1.05)
	1	1.01 (0.95 ; 1.07)	1.02 (0.97 ; 1.07)
	2	1.02 (0.95 ; 1.08)	1.03 (0.98 ; 1.09)
	3	1.01 (0.94 ; 1.09)	1.04 (0.98 ; 1.11)
	4	1.01 (0.93 ; 1.09)	1.04 (0.97 ; 1.12)
	5	1.01 (0.93 ; 1.10)	1.04 (0.97 ; 1.13)
NO <sub>2</sub>	Same day		1.01 (0.97 ; 1.06)
	1		1.02 (0.97 ; 1.07)
	2		1.05 (0.99 ; 1.10)
	3		1.07 (1.01 ; 1.13)*
	4		1.07 (1.01 ; 1.14)*
	5		1.08 (1.01 ; 1.15)*
PM <sub>10</sub>	Same day	1.00 (0.96 ; 1.05)	
	1	1.00 (0.95 ; 1.05)	
	2	0.98 (0.93 ; 1.04)	
	3	0.96 (0.91 ; 1.02)	
	4	0.96 (0.90 ; 1.02)	
	5	0.97 (0.91 ; 1.04)	
UFP	Same day	1.00 (0.95 ; 1.06)	1.02 (0.96 ; 1.08)
	1	1.02 (0.95 ; 1.09)	1.03 (0.96 ; 1.11)
	2	1.03 (0.95 ; 1.11)	1.03 (0.95 ; 1.12)
	3	1.02 (0.93 ; 1.11)	1.01 (0.92 ; 1.11)
	4	1.02 (0.93 ; 1.12)	1.01 (0.92 ; 1.12)
	5	1.00 (0.90 ; 1.11)	0.99 (0.89 ; 1.11)
PNC <sub>total</sub>	Same day	1.02 (0.96 ; 1.08)	1.03 (0.98 ; 1.09)
	1	1.03 (0.96 ; 1.10)	1.04 (0.97 ; 1.12)
	2	1.05 (0.97 ; 1.14)	1.07 (0.99 ; 1.16)
	3	1.03 (0.94 ; 1.13)	1.05 (0.96 ; 1.15)
	4	1.02 (0.92 ; 1.13)	1.04 (0.94 ; 1.14)
	5	1.01 (0.90 ; 1.12)	1.03 (0.93 ; 1.15)
PNC <sub>3-10</sub>	Same day	0.98 (0.94 ; 1.02)	0.98 (0.94 ; 1.02)
	1	0.99 (0.93 ; 1.05)	0.99 (0.93 ; 1.05)
	2	0.98 (0.91 ; 1.05)	0.97 (0.90 ; 1.04)
	3	0.97 (0.89 ; 1.05)	0.94 (0.86 ; 1.02)
	4	1.00 (0.92 ; 1.09)	0.97 (0.88 ; 1.06)
	5	0.96 (0.88 ; 1.06)	0.93 (0.84 ; 1.03)
PNC <sub>10-30</sub>	Same day	0.99 (0.93 ; 1.05)	0.99 (0.94 ; 1.06)
	1	1.00 (0.93 ; 1.08)	1.01 (0.93 ; 1.10)
	2	1.00 (0.92 ; 1.09)	0.99 (0.90 ; 1.09)
	3	1.00 (0.91 ; 1.10)	0.97 (0.88 ; 1.08)
	4	1.03 (0.93 ; 1.14)	1.00 (0.89 ; 1.12)
	5	1.02 (0.91 ; 1.14)	0.99 (0.87 ; 1.12)

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Supplemental Material, Table 3 (cont.):

Pollutant	Time delay in days	While controlling for NO <sub>2</sub>	While controlling PM <sub>10</sub>
PNC <sub>30-50</sub>	Same day	1.03 (0.98 ; 1.07)	1.04 (0.99 ; 1.08)
	1	1.03 (0.97 ; 1.09)	1.04 (0.98 ; 1.10)
	2	1.04 (0.97 ; 1.11)	1.05 (0.98 ; 1.13)
	3	1.03 (0.96 ; 1.11)	1.04 (0.96 ; 1.12)
	4	1.02 (0.94 ; 1.11)	1.03 (0.94 ; 1.12)
	5	1.01 (0.92 ; 1.10)	1.02 (0.93 ; 1.12)
PNC <sub>50-100</sub>	Same day	1.02 (0.98 ; 1.07)	1.03 (0.99 ; 1.07)
	1	1.02 (0.97 ; 1.08)	1.03 (0.98 ; 1.09)
	2	1.06 (0.99 ; 1.14)	1.07 (1.00 ; 1.15)*
	3	1.06 (0.98 ; 1.16)	1.08 (1.00 ; 1.17)*
	4	1.02 (0.93 ; 1.12)	1.05 (0.96 ; 1.14)
	5	1.03 (0.93 ; 1.14)	1.06 (0.96 ; 1.17)
PNC <sub>100-300</sub>	Same day	1.03 (0.98 ; 1.08)	1.03 (0.99 ; 1.08)
	1	1.03 (0.97 ; 1.10)	1.04 (0.98 ; 1.11)
	2	1.08 (1.00 ; 1.17)	1.10 (1.02 ; 1.19)*
	3	1.06 (0.97 ; 1.16)	1.11 (1.02 ; 1.21)*
	4	1.00 (0.90 ; 1.11)	1.06 (0.97 ; 1.17)
	5	1.03 (0.92 ; 1.15)	1.10 (0.99 ; 1.22)
PNC <sub>300-1000</sub>	Same day	1.03 (0.98 ; 1.08)	1.03 (0.98 ; 1.09)
	1	1.02 (0.96 ; 1.08)	1.03 (0.97 ; 1.09)
	2	1.01 (0.94 ; 1.07)	1.05 (0.98 ; 1.12)
	3	0.98 (0.91 ; 1.06)	1.05 (0.97 ; 1.13)
	4	0.96 (0.88 ; 1.04)	1.03 (0.94 ; 1.12)
	5	0.96 (0.88 ; 1.05)	1.03 (0.94 ; 1.13)
PSC <sub>total</sub>	Same day	1.03 (0.99 ; 1.09)	1.04 (0.99 ; 1.09)
	1	1.03 (0.96 ; 1.10)	1.04 (0.98 ; 1.11)
	2	1.03 (0.96 ; 1.11)	1.08 (1.00 ; 1.16)
	3	1.00 (0.92 ; 1.09)	1.08 (0.99 ; 1.17)
	4	0.96 (0.88 ; 1.06)	1.04 (0.95 ; 1.14)
	5	0.98 (0.88 ; 1.08)	1.06 (0.96 ; 1.17)
PSC <sub>50-100</sub>	Same day	1.02 (0.98 ; 1.06)	1.03 (0.99 ; 1.07)
	1	1.02 (0.97 ; 1.08)	1.03 (0.98 ; 1.09)
	2	1.06 (0.99 ; 1.14)	1.07 (1.01 ; 1.15)*
	3	1.07 (0.98 ; 1.16)	1.09 (1.01 ; 1.17)*
	4	1.02 (0.93 ; 1.12)	1.05 (0.96 ; 1.14)
	5	1.03 (0.93 ; 1.14)	1.07 (0.97 ; 1.17)
PSC <sub>100-300</sub>	Same day	1.03 (0.98 ; 1.08)	1.04 (0.99 ; 1.09)
	1	1.04 (0.97 ; 1.11)	1.05 (0.98 ; 1.12)
	2	1.07 (0.99 ; 1.16)	1.10 (1.02 ; 1.19)*
	3	1.05 (0.95 ; 1.15)	1.10 (1.01 ; 1.20)*
	4	0.99 (0.89 ; 1.09)	1.06 (0.96 ; 1.17)
	5	1.01 (0.91 ; 1.14)	1.09 (0.98 ; 1.21)

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Supplemental Material, Table 3 (cont.):

Pollutant	Time delay in days	While controlling for NO <sub>2</sub>	While controlling PM <sub>10</sub>
PSC <sub>300-1000</sub>	Same day	1.02 (0.98 ; 1.07)	1.03 (0.98 ; 1.08)
	1	1.01 (0.96 ; 1.07)	1.03 (0.97 ; 1.09)
	2	1.00 (0.94 ; 1.07)	1.04 (0.97 ; 1.11)
	3	0.98 (0.91 ; 1.05)	1.04 (0.97 ; 1.12)
	4	0.96 (0.89 ; 1.03)	1.02 (0.94 ; 1.11)
	5	0.96 (0.88 ; 1.05)	1.03 (0.94 ; 1.13)

Estimates were calculated using cumulative effect models representing time delayed effects with moving averages up to 6 days (mean of the same day and 5 previous) and including both pollutants with the same lag, e.g. same-day total particle number concentration and same-day NO<sub>2</sub> concentration.

\* p < 0.05 (p-values for the null hypothesis that the corresponding parameter is zero); <sup>a</sup> Units for IQR: SO<sub>2</sub>, NO<sub>2</sub> and PM<sub>10</sub> in µg/m<sup>3</sup>, PNC<sub>x</sub> and UFP in 1/cm<sup>3</sup>; PSC<sub>x</sub> in µm<sup>2</sup>/cm<sup>3</sup>; PNC<sub>x</sub>: Particle number concentration in the given (x in nm) or total size range (3 nm - 1 µm); PSCx: Particle surface area concentration in the given (x in nm) or total size range (3 nm - 1 µm); UFP: Ultrafine particles - Particle number concentrations in the size range 3 - 100 nm.

Supplemental Material, Table 4: Sensitivity analyses for the associations between total ERV and PNC<sub>100-300</sub>.

Specification	Cumulative effect model	PDL model
Original model	1.09 (1.02-1.16)	1.05 (1.02-1.08)
Longer average time period for co-variable air temperature than in original model (mean of 4 days)	1.10 (1.03-1.17)	1.05 (1.02-1.08)
Shorter average time period for co-variable air temperature than in original model (mean of 2 days)	1.07 (1.00-1.15)	1.04 (1.01-1.07)
Longer average time period for co-variable relative humidity than in original model (mean of 2 days)	1.09 (1.02-1.16)	1.06 (1.03-1.09)
Longer average time period for co-variable air pressure than in original model (mean of 2 days)	1.06 (1.01-1.11)	1.05 (1.02-1.08)
Trend with more degrees of freedom than in original model (dfs = 22)	1.10 (1.03-1.18)	1.05 (1.02-1.08)
Trend with fewer degrees of freedom than in original model (dfs = 12)	1.08 (1.01-1.15)	1.04 (1.01-1.07)
Higher order of polynomial than in original PDL model (polynomial order = 4)	-	1.02 (0.98-1.06)
Lower order of polynomial than in original PDL model (polynomial order = 2)	-	1.03 (1.00-1.05)
Higher maximum lag than in original PDL model (max days = 7)	-	1.03 (1.01-1.05)

Computed for cumulative effect models with a lag of two days and for PDL models with a lag of one day. The original model consists of the categorical variables holidays, weekend and season, the linear influence of relative humidity of the same day and the nonlinear influence of the continuous variables air temperature, represented by the mean of the present and 2 previous days and air pressure of the same day. The PDL model has a maximum lag of 5 days and the lag coefficients are constrained to follow a third-degree polynomial of the lag number.